





## New England Medical Center

November 5, 1999

Lipid Clinic and Heart  
Disease Prevention  
Program

Lipid Research Laboratory  
Endocrinology and Lipid Divisions

Office of Food Labeling (HFS-465)  
Center for Food Safety and Applied Nutrition  
Food and Drug Administration  
200 C Street, S.W.  
Washington, D.C., 20204

To the Food and Drug Administration:

Lipton has asked that I provide to you my views on whether the company's petition for a health claim on the association between vegetable oil sterol esters and reduced risk of coronary heart disease is supported by significant scientific agreement. I am familiar with the petition and with the data that support it. I am also familiar with the scientific standard that has formed the basis for approval of other health claims, such as those for soluble fiber from psyllium seed husk and whole oats.

My professional experience is in the field of internal medicine, endocrinology and metabolism, lipids and heart disease prevention, as well as in research on the diagnosis and treatment with diet and drugs of cholesterol disorders. I am currently a professor of medicine and nutrition at Tufts University, Director of the lipid and heart disease prevention program at New England Medical Center, and Chief of the lipid metabolism laboratory at the USDA at Tufts University in Boston. My professional activities have included serving on the nutrition committee of the American Heart Association, the Nutrition Study Section (grant review committee) at the National Institutes of Health (NIH), the editorial boards of *Circulation*, *Metabolism*, and the *Journal of Nutrition*, as well as on the First and Second Adult Treatment Panels of the National Cholesterol Education Program of the NIH. I am currently the chairman of the Metabolism Study Section (grant review committee) of the NIH, and the U.S. editor of the *Journal of Atherosclerosis*. A copy of my curriculum vitae is attached. Based on my professional experience, I am familiar with scientific standards for reviewing studies of cholesterol-reducing agents and with the views on this topic held by others in the scientific and medical community.

In my opinion, the association between vegetable oil sterol esters and reduced risk of CHD is supported by a broad range of clinical experience in a wide variety of subjects over many years. The cholesterol-reducing properties of phytosterols, particularly beta-sitosterol, is well established. The chemistry of vegetable oil sterol esters indicates strongly

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that they will have a cholesterol-reducing effect similar to that of unesterified phytosterols. As Lipton's petition describes, the esterified vegetable oil sterols will be metabolized in the gut, cleaving the ester bond and releasing the phytosterols, predominantly beta-sitosterol.

Studies of vegetable oil sterol esters confirm that they do in fact reduce cholesterol levels when formulated into everyday foods such as vegetable oil spreads. The lowest tested level, about 1 g per day (in two servings), was associated with an LDL-cholesterol reduction of about 7%, with no significant effect on HDL-cholesterol levels (Hendriks et al., 1999). Other reported reductions were consistent or higher. In my view, these levels represent clinically meaningful cholesterol reductions.

Considering all of the studies together, it is my opinion that the data linking cholesterol reduction with consumption of vegetable oil sterol esters are reproducible and robust. These data indicate that the association between vegetable oil sterol esters and reduced risk of CHD is supported by significant scientific agreement. Further, I believe that others in my professional field, reviewing the same data, would reach a similar conclusion.

I also support Lipton's request that vegetable oil sterol esters be exempt from certain regulatory requirements that would otherwise not permit a health claim on the labeling of foods containing this substance. In my experience, the most difficult problem in reducing CHD risk is achieving meaningful long-term dietary modification. If vegetable oil sterol esters can be formulated in convenient and palatable foods such as spreads and salad dressings, this will increase the likelihood that dietary modification will be successful. Therefore, I believe it is appropriate that Lipton's request for exemption be granted, and that a health claim be permitted on the labeling of these foods.

As the above discussion reflects, I am confident that a health claim about the association between vegetable oil sterol esters and reduced risk of CHD would assist consumers in maintaining healthy dietary practices. I appreciate the FDA's consideration of my views.

Sincerely yours,

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EJS/sb

## CURRICULUM VITAE

**Name:** Ernst John Schaefer, M.D. 11/16/98  
**Date of Birth:** November 18, 1945  
**Citizenship:** United States  
**Marital Status:** Married, three children  
**Current Positions:**  
Professor of Medicine  
Tufts University School of Medicine  
Professor of Nutrition  
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Chief, Lipid Metabolism Laboratory, and Senior Scientist,  
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**Education:**  
1968 - B.A., Harvard University, Cambridge, MA, (biology)  
1970 - B.M.S., Dartmouth Medical School, Hanover, NH.  
1972 - M.D., Mount Sinai School of Medicine, New York, NY.  
**Board Certification:**  
American Board of Medicine  
American Board of Internal Medicine  
**Brief Summary:**  
Dr. Schaefer received his B.A. from Harvard University, his B.M.S. from Dartmouth Medical School, and his M.D. from Mt. Sinai School of Medicine; he did his medical residency at Mt. Sinai Hospital, New York, and an endocrinology fellowship at the National Institutes of Health, where he also was a senior investigator. Since 1982 he has been at Tufts University where he is currently a Professor of Medicine at Tufts University School of Medicine, Director of the Lipid Clinic and Division at New England Medical Center, and Senior Scientist and Chief of the Lipid Metabolism Laboratory at the Jean Mayer USDA Human Nutrition Research Center on Aging at Tufts University. He was the recipient of the Irvine H. Page Arteriosclerosis Research Award from the American Heart Association (1981), and the Saul Horowitz Jr. Research Award, Mt. Sinai School of Medicine (1989). He is an author or co-author of over 300 publications and served on the first and second adult treatment panels of the National Cholesterol Education Program of the National Institutes of Health, and the Nutrition Committee of the American Heart Association. Dr. Schaefer is the U.S. editor of the journal Atherosclerosis. His research focuses on the nutritional and genetic regulation of plasma lipoproteins, and their relationship to coronary heart disease risk, and on the dietary and drug treatment of lipid disorders, as well as on optimal diets for the prevention of heart disease in the elderly.  
**Employment:**  
1971 Research Rotation on Lipoproteins, Albert Einstein College of Medicine,  
(Drs. Paul Roheim, Howard Eder).  
1972-1975 The Mount Sinai Hospital, New York, New York, Medical Internship,  
First and Second Year Medical Residency (Dr. Solomon Berson, Dr. Fenton Schaffner, Dr.  
Richard Gorlin)  
11/74-4/75 Guest Investigator, Rockefeller University, New York, New York;  
(on elective time from Mt. Sinai); (Dr. Paul Schreibman).  
1975-1978 Staff Associate, Molecular Disease Branch, National Heart, Lung, and Blood Institute, National  
Institutes of Health, Bethesda, MD; (Dr. Robert Levy, Dr. Bryan Brewer).

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1978-1980 Endocrinology Fellow, National Institutes of Health, Bethesda, MD. (Dr. Bruce Weintraub).  
1980-1982 Senior Investigator, Molecular Disease Branch, National Heart, Lung, and Blood Institute, National Institutes of Health, Bethesda, MD. (Dr. Bryan Brewer).

1982- Chief, Lipid Metabolism Laboratory, Jean Mayer USDA Human Nutrition Research Center on Aging at Tufts University, Boston, MA. (Drs. Hamish Munro, Harold Sandstead, Irwin Rosenberg).

1982- Director, Lipid Clinic and Lipid Division, New England Medical Center, Boston, MA

1982-1989 Associate Professor of Medicine, Tufts University School of Medicine, Boston, MA

1982-1989 Associate Professor of Nutrition, School of Nutrition, Tufts University, Medford, MA

1989- Professor of Medicine, Tufts University School of Medicine, Boston, MA

1989- Professor of Nutrition, School of Nutrition Science and Policy, Tufts University Medford, MA

**Military Service:** 1975-82: Surgeon, Commissioned Corps, U.S. Public Health Service.

**Societies:** Fellow, American Heart Association, Council on Arteriosclerosis  
Fellow, American Federation of Clinical Research  
Fellow, American Society of Clinical Investigation  
Fellow, American Institute of Nutrition  
Fellow, American College of Physicians  
Member, American Association for the Advancement of Science

**Honors:** B.A., cum laude, Harvard University.  
Mosby Book Award for Excellence in Clinical Medicine, Mount Sinai School of Medicine, Class of 1972.  
J. D. Lane Investigator Award, U.S. Public Health Service Professional Association (shared with D.W. Anderson, Ph.D. and H. Bryan Brewer, Jr., M.D.), 1981.  
Irvine H. Page Arteriosclerosis Research Award for Young Investigators, American Heart Association Council on Arteriosclerosis, 1981.  
Saul Horowitz Jr. Memorial Research Award, Mt. Sinai School of Medicine, NY, 1989.  
Outstanding Publication of the Year, 1992, Jean Mayer USDA Human Nutrition Research Center on Aging at Tufts University (shared with J.S. Cohn).

**Special Scientific Recognition, Professional Activities:**

USA-USSR First Lipoprotein Symposium and Scientific Exchange, Leningrad, 1981.  
David Rubinstein Lecture, Canadian Lipoprotein Club, Quebec, 1982.  
Seminar in Medicine, Beth Israel Hospital, Boston, 1983.  
Reviewer, NHLBI Program Projects, 1982-present.  
Member, American Heart Association, Council on Arteriosclerosis, Credentials Committee, 1984-1986.  
Member, American Heart Association, Lipoprotein Metabolism Grant Review Committee, 1983-1987.  
Member, American Heart Association, Council on Arteriosclerosis, Program Committee, 1985-1987.  
Member, Parent Committee for Evaluation of Specialized Centers of Research on Arteriosclerosis, National Heart, Lung, and Blood Institute, 1985-1986.  
Member, Parent Committee for Evaluation of National Demonstration and Education Programs in Arteriosclerosis, NHLBI, 1986.  
Member, Editorial Board, Circulation, 1983-1986.  
Member, Editorial Board, Metabolism, 1985-1992.  
Member, Editorial Board, Journal of Nutrition, 1987-1992.  
Member, National Cholesterol Education Program, Expert Panel on Adult Detection and Treatment (ATP I), National Heart, Lung and Blood Institute, National Institutes of Health, 1986-1987.  
Member, Nutrition Study Section, National Institutes of Health, 1986-1990.  
USA-USSR Second Lipoprotein Symposium and Scientific Exchange, Bethesda, MD, 1986.  
Member, Policy Board, Atherosclerosis Risk in Communities, National Heart, Lung and Blood Institute, 1986-present.  
Member, Cholesterol Education Program, American Heart Association, Massachusetts Affiliate, 1988-1996; Chairman 1990-1991.  
Member, American Heart Association Nutrition Committee, 1989-1992;  
Chairman, Program Committee 1989-1991.

Member, National Cholesterol Education Program, Second Expert Panel on Adult Detection and Treatment (ATP II), National Heart Lung and Blood Institute, National Institutes of Health, 1991-1992.

Member, Metabolism Study Section, National Institutes of Health, 1995-present; Chairman 1998-present.  
U.S. Editor and Reviews Editor, *Atherosclerosis*, 1997 - present.

**Major Current Research Support:**

1. Tufts University Contract with the U.S. Department of Agriculture at the Human Nutrition Research Center on Aging at Tufts University, Lipoproteins, Nutrition, and Aging Contract 53-3K06-5-10 (10/82-present); (E.J. Schaefer, M.D., Principal Investigator)
2. National Institutes of Health, Effects of Dietary Fats on Lipoprotein Metabolism Grant R01HL-39326 (7/87-present); (E.J. Schaefer, M.D., Principal Investigator)
3. National Institutes of Health, Lipoprotein Particles, DNA, and Oxidation in the Framingham Heart Study N01 HC38038 (1984-present); (E.J. Schaefer, M.D., Principal Investigator)
4. New England Medical Center, VA Cooperative Study CSP#363, Central Laboratory for the HDL Intervention Trial (1992-present); (E.J. Schaefer, M.D., Principal Investigator)
5. Comparative HMG CoA Reductase Inhibitor Study, New England Medical Center (Parke Davis) (1996-present); (E.J. Schaefer, M.D., Principal Investigator)
6. National Institutes of Health R01HL-54727, Dietary Fat, Plasma Lipids and other CHD Risk Factors (5/96-present); (A.H. Lichtenstein, D.Sc., Principal Investigator)
7. U.S. Department of Agriculture, Soy Proteins, Isoflavonoids, and CHD Risk in Older Females (1996-present); (A.H. Lichtenstein, D.Sc., Principal Investigator)
8. National Institutes of Health R01HL-54776, Gene diet effects on plasma lipoprotein levels (10/96-present); (J.M. Ordovas, Ph.D., Principal Investigator)
9. Genome Therapeutics Corporation, Genetic defect in Tangier disease (HDL deficiency, E.J. Schaefer, M.D., Principal Investigator).

**Research Interests:**

The nutritional and genetic regulation of plasma lipoproteins, the relationship of lipoproteins to atherosclerosis, and the dietary and drug treatment of lipid disorders, and the development of optimal diets for the prevention of heart disease in the elderly.

## **Significant Original Research Accomplishments**

1. Documentation of transfer of chylomicron apoA-I and apoA-II to plasma HDL in vivo and in vitro (references 4, 38).
2. Documentation of catabolic defect of HDL apoA-I and apoA-II and other studies in Tangier disease, a form of genetic HDL deficiency (references 6, 15, 19, 24, 36, 54, 66, 221).
3. Description of first kindred in which plasma apoA-I was lacking, associated with marked HDL deficiency and premature atherosclerosis and delineation of molecular defect (references 30, 66, 79, 137).
4. Description of first kindred in which plasma apoE was lacking, associated with marked accumulation of chylomicron remnants and atherosclerosis, delineation of molecular defect (references 28, 82, 90).
5. Documentation that apoA-I fractional catabolism is a major determinant of HDL cholesterol and apoA-I plasma levels, and that apoA-I catabolism is enhanced in the setting of hypertriglyceridemia (references 6, 33, 42, 86).
6. Documentation that females produce more apoA-I than do males, and that estrogen administration increases apoA-I production (references 33, 52, 293)).
7. Documentation that restriction fragment length polymorphisms within or adjacent to the apoA-I, C-III, A-IV, apoB and apoA-II genes are not useful markers for coronary heart disease risk (references 83, 119, 120, 152, 161, 179).
8. Documentation that an intestinal cell line (CaCo<sub>2</sub>) synthesizes apolipoproteins and lipoproteins and can be utilized for studies on nutritional effects of lipoprotein production in vitro (references 94, 109, 197).
9. Development of methodology to carry out population studies (with the Framingham Heart Study) to assess normal ranges and the utility of apolipoproteins, lipoproteins and their isoforms and genotypes, fatty acids, and lipoprotein subspecies as biochemical markers of premature coronary artery disease (references 95, 96, 101, 102, 195, 212, 213, 214, 216, 219, 220, 224, 227, 229, 233, 238, 240, 252, 259-265, 267, 268, 270, 272, 273, 274, 275, 281, 286, 287, 290, 297).
10. Precise studies documenting postprandial alterations in plasma lipoproteins and fat soluble vitamins in the young and the elderly (references 112, 115, 123, 131, 135, 144, 146, 149, 202).
11. Documentation that cells can make HDL following apoA-I gene transfection (reference 97).
12. Research on the diagnosis and management of lipid disorders (references 10, 13, 15, 17-19, 24, 26, 27, 53, 58, 64, 65, 67, 69, 74, 77, 84, 85, 89, 91-93, 99, 106, 108, 124, 126, 140-143, 154, 156, 168, 169, 175, 189, 190, 194, 199, 204, 244, 250, 251, 252, 253, 255, 270, 271, 280, 304, 307).
13. Development of stable isotope methods to study the effects of diet and aging on cholesterol and apolipoprotein kinetics in the constantly fed state (references 144, 155, 180, 186, 217, 218, 249, 278, 279, 283, 284, 293, 295, 299, 302).
14. Delineation of lipoprotein abnormalities and familial lipoprotein disorders and other disorders associated with premature coronary artery disease (references 62, 63, 65, 66, 71, 75, 83, 91, 92, 113, 114, 117, 118, 154, 162, 163, 171, 173, 178, 184, 190, 198, 209, 213, 214, 219, 220, 224, 235, 237, 238, 244, 264, 307).
15. Effects of estrogen replacement on plasma lipoproteins in elderly women (references 116, 127, 139, 153, 175, 188).
16. Definitive studies on factors (mainly triglyceride levels) affecting LDL particle size and documentation that LDL size is not an independent risk factor for coronary heart disease (references 103, 110, 127, 138, 165, 178, 191, 192, 265).
17. Documentation of the effects of dietary fat saturation and dietary cholesterol as well as antioxidants and lovastatin on plasma lipoprotein metabolism and hepatic and intestinal apolipoprotein and LDL receptor mRNA levels and diet-induced aortic foam cell formation in monkeys and hamsters (references 147, 174, 182, 218, 222, 231, 241, 242, 243, 247, 256, 291, 298).
18. Documentation of the effects of dietary fats and cholesterol on plasma lipoprotein composition, metabolism, and immune status in humans (references 17, 26, 112, 115, 128, 144, 165, 181, 193, 196, 210, 211, 217, 218, 223, 228-230, 234, 256, 258, 259, 276, 282, 285, 288, 294, 301, 305, 306).
19. Documentation that specific common mutations within the apoE gene and the apoA-IV gene affect the LDL cholesterol lowering response to dietary saturated fat and cholesterol restriction and HMG CoA reductase inhibitors. (references 223, 229, 244, 255, 276, 294).
20. Documentation of the efficacy of various National Cholesterol Education Program Step 2 diets and variability in response in LDL cholesterol lowering (references 201, 247, 250, 251, 256, 257, 258, 276).
21. Documentation that ad libitum diets restricted in fat (15% of calories) promote weight loss and LDL cholesterol lowering (230, 252).
22. Development and evaluation of methods to directly measure serum Lp(a), LDL, and remnant lipoprotein cholesterol levels (216, 241, 297).
23. Documentation of the effect of fat feeding on human intestinal apoB mRNA levels and editing (234).

**BIBLIOGRAPHY** \* invited reviews (n=57), total = 308

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7. Schaefer EJ, Levy RI, Anderson DW, Danner RN, Brewer HB Jr, Blackwelder WC: Plasma-triglycerides in regulation of HDL-cholesterol levels. *Lancet* 2:391-393, 1978.
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9. Schaefer EJ, Levy RI: Composition and metabolism of high density lipoproteins. In *Lipoprotein Metabolism*, Eisenberg, S. (ed.), *Prog. Biochem. Pharmacology*. S. Karger, Basel. Vol. 15, pp. 186-201, 1979.\*
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11. Brewer HB Jr, Schaefer EJ, Osborne JC Jr, Zech, LA: High density lipoproteins: an overview. In *Report on the High Density Lipoprotein Workshop*, Lippel, K. (ed.), U.S. DHEW NIH Publ. 79-1661, pp. 29-41, 1979.\*
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## ABSTRACTS

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157. Ordovas JM, Otvos JD, Martinez A, Najeri G, Wilson PWF, Cupples AL, McNamara JR, Schaefer EJ. Association of a common variant of the CETP gene (Taq1B) with lipoprotein subfractions: the Framingham Offspring Study. *Circulation* I-738;1998.

#### University Service

- 1983-1992 Annual lectures in Tufts University School of Nutrition; Nutritional Biochemistry Course.
- 1984-1991 Annual lecture in Tufts University School of Dental Medicine; Nutrition and Prevention Course.
- 1984-present Annual lectures in Tufts University School of Medicine; Pharmacology course.
- 1985-1986 Member, Search Committee for Chairman of Biochemistry.
- 1985-present Member, Promotions Committee, Jean Mayer USDA Human Nutrition Research Center on Aging at Tufts University.
- 1985-1989 Member, Clinical Appointments and Promotions Committee, Tufts University School of Medicine.
- 1992 Course Director, Nutrition and Aging, student elective.
- 1993-present Annual lecturer in Tufts University School of Medicine; Nutrition Course.
- 1993-present Course Director, Clinical Nutrition and Aging, student elective.

#### Post-Doctoral Fellows, Visiting Scientists and Current Positions

Richard E. Gregg, M.D. 1977-79. Director of Lipid Metabolism Laboratory, Squibb, Inc., NJ, formerly Senior Investigator, NHLBI, National Institutes of Health, Bethesda, MD. (NIH)

David W. Anderson, Ph.D. M.D. 1978-80. Staff Physician, Armed Forces Institute of Pathology, Washington, D.C. (NIH)

Giancarlo Ghiselli, Ph.D. 1980-82. Associate Professor, Temple University School of Medicine, Philadelphia, PA (NIH)

Dennis Sprecher, M.D. 1980-82. Professor of Medicine, Chief, Preventive Cardiology, Cleveland Clinic, Case Western Reserve University, Cleveland, OH. (NIH)

Vodek Sasak, Ph.D. 1983-1985, Assistant Professor of Medicine, Beth Israel Hospital, Boston, MA

Jose M. Ordovas, Ph.D. 1982-85, Scientist, Professor of Nutrition, Jean Mayer USDA Human Nutrition Research Center on Aging at Tufts University, Boston, MA.

Eduardo N. Siguel, M.D., Ph.D., 1983-1986. Assistant Professor of Medicine, Boston University School of Medicine.

Stefania L. Fava, M.D. 1984-1989, Scientist II, Assistant Professor of Nutrition, USDA Human Nutrition Research Center on Aging at Tufts University, Boston, MA.

Jeffrey S. Cohn, Ph.D. 1985-1988, Staff Scientist, Clinical Research Institute of Montreal, Canada

Lola Jimenez, M.D. 1986-1987, Assistant Professor, Dept. of Obstetrics and Gynecology, University of Zaragoza, Spain.

Jacques Genest, M.D. 1986-1990. Staff Scientist, Associate Professor, Chief, Cardiovascular Genetics Laboratory, Clinical Research Institute of Montreal, Canada.

Kew M. Chee, Ph.D. 1986-1987, Professor of Animal Science, Korea National University, Seoul.

Fernando Civeira, M.D. 1987-1989, Assistant Professor of Medicine, University of Zaragoza, Spain.

Jesus Osada, Ph.D. 1988-1990. Assistant Professor of Biochemistry, University of Zaragoza, Spain.

Nathan Kam, M.D. 1989-1990. Department of Medicine, Gastroenterology, Kaiser Hospital, Hayward, CA.

Howard N. Newman, Ph.D. 1988-1989. Professor, Ohio State University School of Medicine.

Carmen Rodriguez, Ph.D. 1989-1991. Assistant Professor of Biochemistry, University of Tannanarive, Canary Islands, Spain.

Pedro Mata, M.D. 1990-1991. Associate Professor of Medicine, University of Madrid, Spain.

Jose Lopez Miranda, M.D. 1990-1992. Assistant Professor of Medicine, University of Cordoba School of Medicine, Cordoba, Spain.

Jens Otto, M.D. 1991-1993. Staff Cardiologist, Division of Cardiology, Rothenburg/Laha, Germany.

Pascal LaGroua, Ph.D. 1991-1992. Private industry, Paris, France.

Leo Seman, M.D., Ph.D. 1990-1994, Assistant Professor of Medicine, Tufts University School of Medicine.

Francine Welty, M.D., Ph.D. 1991-1996, Assistant Professor of Medicine, Harvard Medical School, New England Deaconess Hospital, Scientist II, Jean Mayer USDA Human Nutrition Research Center on Aging at Tufts University.

Marina Cuchel, M.D. 1992-1993. Research Associate, Dept. of Pathologic Biochemistry, Glasgow Royal Infirmary, Glasgow, Scotland.

Ricardo Chirino, M.D., 1993-1994. Assistant Professor of Medicine, University of Las Palmas, Spain

Ursula Schwab, Ph.D., 1994-1995. Research Associate, University of Kuopio, Finland.

Carlos Lahoz, M.D., 1994-1996. Assistant Professor of Medicine, University of Madrid, Spain.

Marju Tilly-Kiesi, M.D., 1995-1996. Associate Professor of Medicine, University of Helsinki, Finland.

Maysa Cendoroglo, M.D., 1995-1997. Assistant Professor of Medicine, Division of Gerontology, National University, Sao Paolo, Brasil.

Rafael Carmena, M.D., 1996-1997, Assistant Professor of Medicine, Valencia, Spain.

Juan Pedro Botet, M.D.; 1996-1997, Associate Professor of Medicine, Barcelona, Spain.

Marita Ostos, Ph.D., 1996-1997, Assistant Professor of Medicine, Zaragoza, Spain.

Patrick Couture, M.D., Ph.D., 1997-present.

Julian Marsh, M.D., 1998-present.

Sander Robins, M.D., 1998-present.

Giusseppina Russo, M.D., Ph.D., 1998-present.

**Graduate Students** (Ph.D. Candidates, Tufts University School of Nutrition and other graduate schools, Current Positions).

Jean Eric Triaud	1983-1987	Staff Scientist, Matritech, Cambridge, MA. Received Ph.D. 1987
Thomas Hughes	1984-1987	Staff Scientist, Sandoz Research Institute, Received Ph.D. 1988
Lori Hennessy	1985-1988	Research Scientist, University of California, San Francisco, Cardiovascular Research Institute, Received Ph.D. 1989
Hannia Campos	1986-1989	Assistant Professor, Harvard School of Public Health, Boston. Received Ph.D. 1990
Young Shin Ahn	1989-1993	Assistant Professor, University of Seoul, Korea, Received Ph.D. 1993 (Advisor J.M. Ordovas)
Margaret Brousseau	1989-1993	Scientist II, Jean Mayer USDA Human Nutrition Research Center on Aging at Tufts University; Received Ph.D. 1993.
Li Ching Lyu	1989-1993	Associate Professor, Taiwan Normal University, Taipei, Taiwan Received Ph.D. 1993.
John Millar	1989-1994	Research Associate, Dept. of Pathologic Biochemistry, Glasgow Royal Infirmary, Glasgow, Scotland, Received Ph.D. 1995 (Advisor A.H. Lichtenstein)
John Contois	1990-1994	Research Associate, M.D. Anderson Hospital, Houston, TX Hartford, CT, Received Ph.D. 1995, University of Connecticut (Advisor C. Lammi-Keefe)
Wendy Pitman	1986-1988 1994-1996	Research Associate, Jackson Laboratories, Bar Harbor, ME Received Ph.D. 1996 (Advisor J.M. Ordovas)

William Karge	1992-1995	Major, US Army, Research Laboratories, Natick, MA Received Ph.D. 1996 (Advisor J.M. Ordovas)
Zhengling Li	1990-1997	Research Associate, Joslin Diabetes Center, Harvard Medical School, Beth Israel-Deaconess Med.Ctr., Boston, MA Received Ph.D. 1997
Silke Vogel	1991-1997	Research Associate, Dept of Pediatrics, Columbia-Presbyterian Medical Ctr., NY, NY; Ph.D. U. Connecticut; (Advisor C. Lammi-Keefe); Received Ph.D. 1997.
Jennifer Jenner	1990-1998	Research Associate, US Army Research Laboratories, Natick, MA; Received Ph.D. 1998.
Sahar El Swefy	1995-1997	(Ph.D. candidate, University of Zagazig, Egypt); (Advisors E.J. Schaefer, L.Seman, M. El Sweidy); Received Ph.D. 1997
Elaine Larsen	1991-present	(Advisor J.M. Ordovas)
Wanda Carrasco	1992-1998	Research Associate, Rockefeller University, NY, NY; Rec'd Ph.D. 1998
Ilona Larsen	1994-present	Ph.D. candidate, University of Giessen, Germany; (Advisor H. Daniel)
Zhiyong Sun	1994-present	

#### Endocrinology Fellows with Lipid Clinic Training Rotation

Elise Rodman, M.D.	1983-1984;	Practice, Woburn, MA
James Goldman, M.D.	1983-1984;	Practice, Lexington, MA
Charles O'Neill, M.D.	1984-1985;	Emory University School of Med./Hosp./Atlanta, GA
Marc Hellerstein, M.D.	1984-1985;	San Francisco General Hospital, UCSF
Antonio Granfone, M.D.	1985-1986;	Massachusetts General Hospital Practice Group
George Chao, M.D.	1986-1986;	Practice, Modesto, CA
Eric Dyess, M.D.	1987-1988;	Practice, Jackson, Mississippi
Glenn Stall, M.D.	1987-1988;	Practice, Boston, MA
Christine McLaughlin, M.D.	1988	Practice, Lexington, MA
Deborah Riester, M.D.	1989	Practice, Framingham, MA
Nicholas Sauter, M.D.	1989	Practice, Boston, MA
Abby Landzberg, M.D.	1990	Practice, Boston, MA
Leo Seman, M.D.	1990-1993;	Endocrine and Lipid Division, NEMC
Maria Vargas, M.D.	1991-1992;	Practice, Dothan, AL
Katya Divari, M.D.	1992-1993;	Practice, Worcester, MA
Boris Stevinin, M.D.	1993-1994;	Practice, New York
Margaret Flynn, M.D.	1993-1994;	Practice, Boston, MA
Richard Siegel, M.D.	1994-1995;	Endocrine, NEMC
Linda Schloepfer, M.D.	1994-1995;	Practice, Greenwich, CT
Sol Jacobs, M.D.	1995-1996;	GMA, NEMC
Richard Warshaw, M.D.	1995-1996;	Practice, Boston, MA
Prashant Nadkarni, M.D.	1996-1997;	Practice, Calcutta, India
Linda Margeloff, M.D.	1997-1998;	Endocrine, NEMC
Sorin Hersovici, M.D.	1997-1998;	Endocrine, NEMC
Sumati Srivatsa, M.D.	1998-1999;	
Anastasios Pittas, M.D.	1998-1999;	

#### Medical Students on Research Rotations

Pierre Moussa	1984
Carol Miti	1984-1985
Wayne deTorres	1985-1986
Helen Corbett	1986-1987
Vivian Cheung	1990-1992
Janine Arnold	1993
Jens Lohrmann	1997
Jan Wagner	1998

#### Students on Research Rotations

Danique Van Dongen	Summers, 1991-1995; Jacob Taylor, Summers, 1997,1998
Paul Wong	Summers, 1992, 1993 Nick Donin, Summer, 1998
Eliot Berkowitz	Summer, 1994 Peter Schaefer, Summer, 1998
Brendan Hayes	Summer, 1995 Robert Higgins, Summer, 1998
Jan Hollihnn	Summer, 1995 Robert Lopez, Summer, 1998
Monique Verrier	Summer, 1996 Alex Garcia, Summer, 1998
Leo Yin	Summer, 1996
John O'Connor	Summer, 1997

### Technicians and Subsequent Positions

Judith R. McNamara	1982-present
Lois Litwack Klein	1984-1986, student, Tufts University School of Nutrition
Allison Robins	1984-1986, student, Tufts University School of Veterinary Medicine
Sandra Craig	1984-1987, student, University of Massachusetts, Lowell, physical therapy
Diane Cassidy	1985-1989, employee, Serono Corporation
Steven Johnson	1985-1989, student, University of Missouri School of Osteopathic Medicine
John Millar	1985-1989, student, Tufts University School of Nutrition
Jennifer Jenner	1987-1990, student, Tufts University School of Nutrition
John Contois	1987-1990, student, University of Connecticut Nutrition Program
Erling Blijlevens	1989-1992, private industry, The Netherlands
Kari Wojtanik	1992-1995, student, Biochemistry Dept., Tufts University School of Medicine
Wanda Carrasco	1990-1992, student, Tufts University School of Nutrition
Doreen Osgood	1992-1997, student, Tufts University School of Nutrition
Tatyana Massov	1993-present
Carol Lum	1993-1995, private industry
Tracy Thomas	1993-1996, study coordinator, Massachusetts General Hospital
Scott Dunlop	1993-1995, private industry
Carl Deluca	1995-1998, graduate student, Columbia University, Department of Nutrition
Susan Nelson	1996-present
Paulesh Shah	1996-1998, medical student, Boston University School of Medicine
Jennifer Daly	1996-1997, medical student, Tufts University School of Medicine
Tim Tayler	1996-1998, graduate student, MIT School of Neuroscience
Montserrat Villela	1996-1997, graduate student, University of Illinois, Urbana/Champaign
Danique Van Dongen	1996-present
Richard Lirio	1997-present
Margaret Diffenderfer	1998-present
Allison Goldkamp	1998-present